chamber **12** present on either side of a non-linear spring **14**, a load supporting rod **16**, a top support plate **18**, a bottom support plate **20**, a supporting plate **22**, fasteners **24** and connectors **26**. The non-linear spring **14** is comprised of an upper metal support **28**, an elastomeric isolator **30**, and a lower metal support **32**. The upper pressure chamber is comprised of a top side **34**, an upper cylindrical side wall **36** with a top edge and a bottom edge, upper rubber bellows **38**, an upper air inlet **40**, and a bottom side to the upper pressure chamber **42**. The lower pressure chamber **12** is comprised of a top side **44**, a lower cylindrical side wall **46**, lower rubber bellows **48**, a lower air inlet **50**, and a bottom to the lower pressure chamber **52**. The upper pressure chamber contains upper rubber bellows **38** with a top edge **54** and bottom edge **56**. The top edge **54** of the upper rubber bellow **48** is secured between the underside of the upper pressure chamber top **34** and the top edge of the cylindrical side wall **36**. The bottom edge of the upper pressure chamber upper rubber bellows **38** is secured between the bottom edge of the cylindrical side wall **36** and the top edge of the lower metal support **32** of the nonlinear spring **14**. The lower pressure chamber **12** contains a lower rubber bellows

48 with a top and bottom edge. The top edge of the lower rubber bellow **48** is secured between the bottom side of the lower metal support **32** and the top edge of the lower pressure chamber cylindrical side wall **46**. The bottom edge of the lower rubber bellow **48** is secured between the bottom edge of the cylindrical side wall **46** and the top edge of the bottom support plate **20**. The upper pressure chamber upper rubber bellows **38** and lower pressure chamber lower rubber bellows **48** secured in this way each take on a doughnut shape. An upper air inlet **40** present on the cylindrical side wall **36** of the upper pressure chamber **10** allows air to be pumped into the upper pressure chamber **10** which transfers increased load onto the nonlinear spring **14**. A top support plate **18** is in contact with the top side of the upper pressure chamber **10**. The top support plate **18** is attached by fasteners **24** to connectors **26** which are attached to the top side of a supporting plate **22**. The bottom side of the support plate **22** is attached to the bottom support plate **20** by multiple fasteners **24** to the under side of the bottom support plate. A load supporting rod **16** runs from the top support plate **18** through the center of: the space in the center of the upper rubber bellows **38**

in the upper pressure chamber **10**, the nonlinear spring **14**, the supporting plate **22**, space in the center of the lower rubber bellows **48** in the lower pressure chamber **12** and the bottom support plate **20**. The load supporting rod **16** has a smaller diameter at the lower end and a larger diameter at the upper end. The larger diameter end of the load supporting rod **16** passes through the center of the top support plate **18** and through the space in center of the doughnut shaped upper rubber bellows **38** of the upper pressure chamber **10**. Due to its larger dimension, the larger diameter end of the load supporting rod **16** can not pass through the hole in the top of the upper metal support **28** of the nonlinear spring **14**. The actuator is part of a pneumatic system including a pump, pressure chambers, and a pressure reservoir to facilitate rapid response times for stiffening and softening. By introducing air into the upper pressure chamber **10**, a load is applied to the nonlinear spring. Similarly, the lower pressure chamber **12** reduces the load on the non-linear spring **14**. A load due to pressure in the upper chamber is added to the external supported load while a load due to pressure in the lower chamber is subtracted from the external supported load. The nonlinear spring **14** stiffness changes with varying loads. By applying

pressure to either the upper pressure chamber **10** or the lower pressure chamber **12**, the natural frequency of the system may be regulated. One or two pressure chambers may be present depending on the application. Using this device, adaptive vibration attenuation is implemented by passive vibration mounts that allow the adjustment of their dynamic stiffness characteristics in response to changes in the excitation or loading conditions. The mount stiffness is varied by combining a passive vibration mount with highly non-linear force-deflection characteristics with a one-directional or bi-directional pneumatic actuator. These adjustments of mount characteristics result a change of the natural frequency by shifting the operating point of the nonlinear spring. Non-invasive, non-contact sensors are used together with hardware- or software-based signal processing to identify the excitation displacement and/or force signal and to generate the appropriate adjustments of the passive vibration mount characteristics.

Please replace the paragraph beginning at page 7, line 16, with the following rewritten paragraph:

Figures 2A, 2B, and 2C show a side view of a mechanical system. In instances where stiffness adjustments do not have to